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"Perspectives of the Development of Missile Armament of Ground Troops"

by

Marshal of Artillery S. Varentsov

The main factor determining the radical changes in operational science which have occurred in the last two or three years has been the sharp increase in power of the artillery strikes which can be brought to bear in the operations of a front (front) and of an army. Moreover, whereas previously the heaviest artillery strikes were delivered in the direct vicinity of the front line, against objectives (obyekt) located in the tactical zone, while the weight of this fire lessened as depth (glubina) increased, under present conditions the weight of artillery strikes is, in practice, independent of the distance of the objectives being fired upon from the front line. Even heavier strikes can be brought to bear on those of the enemy's important operational objectives which lie in the deep rear than against objectives in the tactical zone and the closest operational depth.

The ability to administer crushing nuclear strikes throughout the entire operational depth of the enemy and against the principal objectives of the strategic rear has given modern operations a new quality. In the conduct of operations of a front or an army, the whole of the territory occupied by the opposing enemy troop formation (gruppirovka) and all the elements which make up this formation are involved in direct combat actions from the outset.

It is generally acknowledged that firepower (ogon) has become the deciding factor in an operation, determining its planning, the sequence in which it is conducted, its course and its final results. The main constituent of modern firepower, understood in the broad sense, is nuclear strikes directed against the most important enemy troop formations, against his nuclear weapons, his communications centers, his control posts, and the objectives in his rear area.

A modern front has various means of delivering nuclear strikes. These can be provisionally divided into two groups: the nuclear-missile weapons of the ground troops and airborne (aviatsionnyy) nuclear weapons (in combined operations involving a front and a fleet there will be a third group - naval nuclear weapons). The first group - the nuclear missile weapons of the ground troops - plays the decisive role in front and army links (zveno). This is confirmed by an analysis of the capabilities of the various delivery vehicles (nositel) for nuclear charges (zaryad), by the level of missile technology which has been reached, and by the perspectives of the further development of armament which have been projected.

The presence of missile troops in the composition (sostav) of a front, an army, or a division allows the tempo of an offensive operation to be sharply increased and to be carried to a considerably greater depth.

The new possibilities of operational groupings (obedineniye) appeared, as we know, with the inclusion in their composition of missile large units (soyedineniye) and units (chast) equipped with missiles with nuclear charges. A front received missiles with nuclear charges with a power of several tens of kilotons and a range of up to 250-300 kms (type R-300 missiles). In the composition of an army were included missile brigades equipped with missiles with nuclear charges of approximately the same power as those of a front and with a range of 150-170 kms (type R-170 missiles). For the armament of a division missiles were received with nuclear charges of a power of between several kilotons and several tens of kilotons, with a maximum effective range (dalnoboynost) of 30-40 kms (type R-30 missiles).

Such missile armament was received by a front at a period when an offensive operation in the West European theater of combat operations was still planned to advance to a depth of 400-500 kms at an average rate of 40-50 kms a day. At the present time the penetration capacity (probivnaya sposobnost) of motorized rifle and tank divisions, which has been increased many times, allows the depth of an offensive operation to be increased to 1,000 - 2,000 kms, so that, in practice, it embraces the entire depth of the West European theater of combat operations.

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In this connection, naturally, the question arises whether the capabilities of the nuclear-missile weapons which are included in the composition of a front correspond to the new requirements which arise.

An analysis of a modern offensive operation of a front and of an army, and of the conditions of the use of missile troops in such an operation, shows that it is essential to include the new nuclear-missile weapons in the composition of a front. It is known that the introduction of nuclear-missile weapons into the ground troops has exerted a decisive influence on the character of their combat operations. In turn, the new conditions of combat operations which arise from this influence the development of missile weapons.

What perspectives of the development of missile armament of the ground troops in the next few years present themselves?

An analysis of present-day operations is insufficient for a correct answer to this question. It is necessary also to look into the immediate future and to determine how the operations of ground troops may develop subsequently.

In analyzing a modern operation, we consciously concentrate our main attention on the offensive operations in the initial period of a war, since it is clear that in accordance with the increase of the power of nuclear weapons and of the increase in their supply to the most powerful armies of the world, the significance of the operations in the initial period of a war is continually increasing. The larger the scale on which nuclear weapons are employed, the greater is the significance of the results of the first strikes on the enemy. It is natural to suppose that the operations in the initial period of a future war may exert a decisive influence on the progress of the war and may subsequently also determine its outcome.

The massive employment of nuclear weapons can only produce the expected effect if its results are exploited to the maximum by the ground troops, with the aim of seizing the territory occupied by the enemy, of depriving the enemy of freedom of maneuver, and of opportunities to regroup his forces which have

been routed or overwhelmed by nuclear strikes. This means that the massive employment of nuclear weapons itself predetermines the necessity for offensive actions.

One of the most important qualities of a modern offensive operation by a front and an army is high mobility (manevrennost). In operations during the initial period of a war this quality is expressed in its clearest form.

In operations in the initial period of a war the missile troops of a front will occupy attack positions at a distance of 70-100 kms from the contact line (liniya soprikosnoveniya) of the troops. From these positions they can strike the enemy to a depth of 150-200 kms from his forward area (perednyy kray). With a depth of operation of a front of 500-600 kms this is, in all, only a third of the complete depth of the operation.

Consequently, the missile troops of a front are at present not in a position to fulfill the task of inflicting a simultaneous nuclear strike on the whole depth of an operation of the front. As a result, the enemy will be able to concentrate his reserves and his means for nuclear attack and to regroup (privodit voyska v poryadok) after our first blow against the rear of his group of armies.

In order to hit deep objectives which are beyond the range of fire of the nuclear-missile weapons of a front, the missile troops of a front must move forward, which in turn depends upon the advance of the motorized rifle and tank divisions.

It is fully realized that the enemy will attempt to make use of the zone which is out of range of our nuclear-missile fire for the concentration of his resources for an atomic attack and for the subsequent launching of strikes against our advancing troops.

According to available information, very active work is being carried out in the United States of America on the "Pershing" missile, whose range of action whould reach 1,000 - 2,000 kms. This missile is seen by the leading military circles in the USA not as a strategic weapon but as a weapon which is intended for use within the composition of a group of armies. Efforts are also being made to increase the range of the "Redstone" army missile to 600-800 kms.

A front can oppose these weapons of the enemy with comparatively weak and, in the present PVO, insufficiently reliable strikes by the front's air support (frontovaya aviatsiya). It is true that one can count on action against objectives which are located in a zone which is out of range of the missile weapons of a front, by missile troops of strategic designation (strategicheskogo naznacheniya), a part of whose strikes can be allocated to the support of the front. However, it is obvious that the main attention of the strategic missile troops will be concentrated on the fulfilment of their main tasks, and that the interests of the front will be satisfied only if a suitable reserve of their combat capabilities exists.

In the course of an operation, missile troops are compelled to make up for their insufficient maximum effective range by movement. If in an offensive operation which is moving at 30-40 kms a day, the missile units of an army can be limited to one change of location for each two or three days of the advance, then when the rate of the operation increases to 100 kms a day, they must move every day.

The experience of exercises and calculations shows that at every moment during the progress of an operation, up to 50 percent of the missile troops are on the move. In individual cases, when the troops are completing a rapid advance (stremitelnyy brosok), the simultaneous movement of up to three quarters of the missile troops of a front becomes necessary. For instance, missile units armed with missiles of type R-170 occupy launch sites (startovaya pozitsiya) 30-50 kms from the enemy and, in consequence, the extent of their range (zapas ikh dalnosti) is 100-120 kms. If the troops move forward 100 kms in one day these units will be, in practice, unable to carry out even frontal fire, to say nothing of shifting fire (manevr ognem) onto the flanks of the army. They are therefore forced to begin moving approximately half of their battalions (divizion) either just as the advance begins or within a few hours.

The need to achieve high mobility of missile units and in this way to increase the time in which they are in action has made it necessary to review a series of technical questions in the preparations for nuclear-missile fire. Thus, as a result of important scientific-research and practical work carried out by

the troops, by scientific establishments and learned institutions, the time needed to prepare for the launch of a missile has been sharply reduced. For instance, the prelaunch preparation of an R-170 missile has been shortened from 2 hours to 35 minutes, the time for the preparation of data has been reduced from 95 to 8-10 minutes, and the duration of the topographical and geodetic work in the tying-in of the launch site (privyazka startovoy pozitsii) from 24 hours to 1.5 to 2 hours. However, the possibilities of cutting down time by this technique are not limitless. In addition, in changing site, the march itself takes up a considerable part of the time.

In the course of an operation, as a result of inadequate range, not less than half the missile troops of a front are excluded from action. Thus, in exercises the battalions of a missile brigade armed with missiles of the type R-170 made from 4 to 5 moves in the course of a front operation, wasting up to 15-20 hours on each of them. As a consequence of this each battalion is excluded from active firing for 3-4 days of the total time of the operation.

Frequent moves of the missile units of a front and an army are also unfavorable for other reasons. Moving battalions in the course of an offensive operation, we are forced to deploy them in an area where a considerable number of nuclear strikes may be delivered against them by the enemy. At the moment it is still difficult to imagine how such an area will look from the point of view of destruction and of radioactive contamination. One thing which is clear is that the choice of site locations and the deployment of missile units under these conditions will not be as simply done as it is in exercises.

One of the manifestations of the high mobility of a modern operation is the need, which occurs comparatively frequently during its course, for the transfer of the main thrusts (usiliye) from one direction to another. This transfer will be expressed first of all in the shifting of nuclear-missile strikes, that is to say, in the concentration of the fire of missile large units and units in a new direction. The deficiency in maximum effective range of the missile troops can not be made up by maneuvering on wheels (manevr kolesami) because the mobility of modern missile troops does not exceed that of tank and motorized rifle divisions. The

only method by which the problem of the transfer of the main thrusts of a front in the course of an operation can be solved is therefore a shift of fire of the missile troops from the site locations which they occupy, (with maneuvers on wheels only within the limits of these locations in order to achieve security in repeated salvoes). However, for this they must naturally have a suitable maximum effective range.

Calculations show that in order to carry out a shift of fire in a zone of a front where the missile units are positioned in site locations at a normal (up to 70-100 kms) distance from the line (rubezh) reached by the forward sub-units (podrazdeleniye) of the advancing troops, a front's missile units must have a range of not less than 600-800 kms.

That the equipment of a front with long-range (dalnoboynaya) missiles is a growing necessity is also shown by the experience of the last exercises, in which the composition of fronts included separate missile units armed with missiles with a range of up to 500-550 kms (missiles of type R-550 and KR-500).

However, under modern conditions a range of 600-800 kms for front missiles must already be recognized as insufficient.

It is known that the task of destroying the main European formation of ground troops of the enemy cannot be achieved by the conduct of one frontal operation in the West European theater of combat operations, with a depth of 500-600 kms. At the present time, troops of NATO are dispersed throughout the whole territory of Western Europe. A clear tendency to their further dispersion has been noticed which is specifically confirmed by the measures taken by the leaders of NATO to station units of the West German Bundeswehr and of depots of the West German army on French and even on British territory.

The depth of the West European theater of combat operations in the main axes of operation corresponds approximately to the depth of two modern frontal operations. It is obvious that only the destruction of the formation of the enemy throughout the entire depth of the theater of combat operations and the seizure of the territories occupied by the formation in the main operational axes will insure a positive result for us of combat operations in the theater.

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The strategic task in the destruction of the main European formation of the forces of the enemy should be achieved by a single effort. There must be no pauses of any kind between the successive frontal operations which are carried out in each of the main axes of operations. The carrying out of successive frontal operations without a pause is, in our view, an urgent problem confronting Soviet operational science today.

In the conduct of such frontal operations, the missile troops will not have sufficient time for regrouping, moving up, and deploying to new site locations (pozitsionnyy rayon), for building up a stock of missiles and special charges (spetszaryad). In other words, they will not have all those favorable conditions which are created by the preparatory period of operations in the classical meaning of this category of operational science.

At the same time missile troops equipped with missiles with a range of 600-800 kms for the delivery of nuclear-missile strikes in the interests of a follow-up operation (posleduyushchaya operatsiya) of a front should be moved forward and deployed to new site locations. For this, as is shown by calculations, they must move forward 400-500 kms in one or two changes of location during the progress of the operation of a front. At a speed of march of operational-tactical missile units of 15-20 kms per hour (determined by the technical conditions of the transport of missiles, of special charges, and of the movement of special vehicles), for movement under any but the most favorable conditions, not less than 2-3 days will be expended. Thus, even with front missiles with a range of 600-800 kms, we come up against the same undesirable phenomenon which appeared with missile units armed with missiles of the types R-170 and R-300 in the exercises which were carried out recently, that is, with their extended exclusion from firing in the period of greatest activity, when the fate of an operation is decided in the course of meeting engagements (vstrechnoye srazheniye). Because of the insufficient capability of the missile troops we are confronted with the need to have them twice as large as is necessary for the solution of the tasks which face them.

As we know, the enforced holding in reserve of a significant part of the fire capacity in the dynamic (dinamika) of an operation as a result of the movement of artillery and the change of bases

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of aircraft has also taken place before, in the years of the Great Patriotic War and in the postwar years. However, such enforced holding in reserve did not then lead to a drop in the combat capabilities of an army or a front, because when the troops advanced the volume of fire tasks of the artillery and of aircraft in the depth of the defense (glubina oborony) dropped sharply. At the same time, the requirement of an army and a front for fire support was confined mainly to tasks which were decided in the period of artillery and air preparation for the offensive.

Now the situation is different. The specific weight and significance of meeting battles and engagements in offensive operations has risen sharply. It is in meeting engagements which are of short duration but stubborn that the fate of an operation can be decided. The success of a meeting engagement depends first of all on forestalling the enemy in bringing a nuclear-missile strike to bear and on the power of this strike. Therefore, during the course of the whole operation, the commander of a front or of armies must have at his disposal the maximum nuclear-missile resources in readiness for strikes aimed at the destruction of the formations of the enemy in meeting engagements.

In order to insure the constant readiness of the nuclear-missile resources of a front for use in the course of an operation, front missile large units and units must have missiles with a range of 1,000-1,200 kms. With operational missiles of such a range the commander of a front can carry out a shift of fire with all the missile resources of a front in the course of a frontal operation throughout its entire depth.

A modern offensive operation should not be viewed as anything else but an operation by several fronts, performing a common strategic task. One of the most important conditions for the success of such an operation is close and uninterrupted cooperation between the fronts.

The forms of cooperation of fronts whose offensive operations are united by a single aim and purpose are manifold. Mutual fire support takes on primary significance in conditions in which nuclear-missile weapons are used on a mass scale.

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Previously, before the widespread introduction of long-range missile equipment into the system of armament of ground troops, fire support between fronts which were taking part in a stragetic offensive operation was limited to mutual fire support within tactical limits and to cover with fire the boundaries (styk) of fronts. Under modern conditions the possibility of carrying out a wide shift of nuclear-missile fire along a front has presented itself. Such a shift is especially necessary in connection with the limitation of time for the maneuver of combined arms (obshchevoyskovoy) and tank large units.

In a modern operation a shift of fire by the missile troops of a front to a sector of a neighboring front is not an exception but a normal occurrence. Thus, one of the requirements which the conditions of a modern offensive operation impose on the missile troops of a front is the ability to carry out such a shift in a short time. Fire shifts to areas belonging to the adjacent flank of a neighboring front and to areas near the distant flank of a neighboring front should be regarded as equally possible events. This means that front missile large units and units must be ready to carry out a fire shift along the whole sector of neighboring fronts.

Moreover, in the conduct of modern operations the need may arise for a concentration of nuclear-missile strikes by several fronts in the sector of a single front. In this case a shift of the nuclear-missile fire of a given front across the sector of a neighboring front into that of a third is possible. The possibility of such a situation is confirmed by experience. Thus, at a decisive moment of the operation in one of the war games it became necessary for missile troops to carry out a fire shift across the sector of a neighboring front. To carry out such a shift of nuclear-missile fire the missile troops subordinated to a front would need, as calculations show, a range of not less than 1,000-1,200 kms.

Thus, the need to have in a front missiles with a range of not less than 1,000-1,200 kms is determined by the necessity for fire shifts into the depth of the operations of fronts and by the need for fire shifts across a front into the sector of activity of several fronts.

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In addition, we consider it expedient to strengthen a front with Reserve of the High Command (Rezerv verkhovnogo glavnokomandovaniya - RVGK) missile large units which have a range of 2,000-2,400 kms. With such missile large units and units, front commanders will be able to organize a shift of nuclear-missile strikes with the aim of annihilating the most important operational and strategic objectives in the theater of combat operations.

An analysis of modern operations by armies and of the requirements for shifting by nuclear missile strikes which occur during their course shows that under modern conditions an army needs missiles with a range of 500-600 kms.

At first glance, the requirements imposed for maximum effective range of missile armament of the ground troops may seem excessive. However, they are completely natural (zakonomernyy).

Radical changes in view on the character of operations are taking place in operational science, and new forms for their conduct are being worked out which would have seemed fantastic 8-10 years ago. The definitive review of the old concepts of operational science, called for by the unprecedented growth in the firepower of modern operational formations and combined arms large units, exercises an inescapable and no less decisive influence on the development of armament. In this, as never before, the dialectical link between the armament of an army and the forms of conducting military operations is clearly shown.

The sharp rise in the maximum effective range of missiles is the main tendency in the development of the missile armament of the ground troops. Only when the problem of increasing the maximum effective range of front and army missiles has been solved can the armament of the ground troops be brought into conformity with modern forms of warfare.

Increase in the maximum effective range of front and army missiles confers a series of other advantages, as well as solving the main problem - the shift of nuclear-missile strikes along a front and in depth within the required limits. In particular, it substantially increases the viability of the missile troops, which

are spared the necessity of moving for great distances over territory which has been subjected to mass nuclear strikes and liberated from the enemy.

Missile units are extremely vulnerable while on the march. This is primarily because the camouflage of columns of missile units and sub-units which include in their composition a large quantity of special vehicles is extremely difficult. As for a missile itself, it is easily located by all types of reconnaissance both on the launching mount (puskovaya ustanovka) and on the vehicles (telezhka) which transport it because of its dimensions, which are large in comparison with those of other weapons, and because of its specific shape.

Missiles and special charges are vulnerable to fire of all sorts, including hand-held weapons and machine guns. It is known that in the NATO countries, particularly in the American and British armies, special diversionary agent groups have been set up and are being trained which are given the single task of destruction or knocking out of action of missiles and special charges. Penetration by a rifle or a pistol bullet is enough to knock out a modern guided missile or its warhead with its special charge. The likelihood of attacks by diversionary agent groups during the move of a missile unit across territory liberated from the enemy in the absence of solid fronts is very great. If missile units are deployed in dispersed locations which have been prepared befprehand and maneuvered only in these locations they can be protected with sufficient reliability both from the enemy's reconnaissance and from his diversionary agent groups.

Site locations for missile units with a great range of fire can be prepared beforehand and well equipped in all respects, including anti-atomic. If missile units move forward behind advancing troops, it is necessary, as a rule, to deploy them in unprepared locations, which is confirmed by the experience of exercises which have been carried out. The fact that missile units moving behind the troops will stay a relatively short time in any one location creates considerable difficulties in the engineering equipment (oborudovaniye) of their combat setup. The control of missile troops who position themselves and maneuver in defined locations which have been selected beforehand is considerably simpler and more reliable.

Long ranges of fire by missile troops provide great advantages in cases when the enemy succeeds in forestalling us in active operations and when our troops are compelled to defend themselves for a definite period. In such a situation missile large units of operational designation can locate themselves at a considerable depth - up to 300 kms from the contact line of the troops, in site locations which have been prepared beforehand. This insures stability and a small degree of vulnerability for the combat setup of the missile troops, reliability in their control, and constant readiness to carry out strikes against the enemy, even when the latter achieves a temporary success and penetrates territory occupied by our troops. Even in such a difficult situation the commander of the troops of a front retains the ability to mass the maximum nuclear strikes in the interests of a front at a decisive moment. The stability of the combat setup of missile units which have a range of 1,000 - 1,200 kms allows a massed strike to be delivered against the main formation of troops of the enemy and against his nuclear-missile weapons, in order that our troops may seize the initiative and go over to active offensive operations.

Another not unimportant factor is that very favorable conditions are created for missile large units and units in organizing the movement of missiles and special charges. In this case, units of the missile technical rear will be dispersed and well protected at a considerable distance from the area in which the direct combat operations of the ground troops are taking place. This insures thoroughness and rhythm in the work of the missile-technical rear, which is one of the most important factors in the maintenance of high combat preparedness of missile troops in a modern operation.

While proposing that a front and an army should have in their composition missiles with ranges of 1,000 - 1,200 kms and 500-600 kms, respectively, we consider that the range of tactical (takticheskaya) missiles should also be increased and should be within the limits of 100-120 kms.

Together with a long range, missile armament should have a high degree of mobility of fire and of march. It should be noted that even for missile large units and units equipped with operational (operativnaya) missiles with ranges of 500-600 kms and 1,000 - 1,200 kms, the requirements of mobility remain extremely strict. These requirements should correspond, in our view, to the

requirements of mobility imposed upon missiles of operational - tactical and tactical designation.

In the period while an operation is being carried out, operational missiles should provide massed nuclear fire to the greatest possible degree in a limited time and shift both along the front and in depth at the decisive moments of the operation.

In speaking of the perspectives of the development of missile armament of the ground troops, we have intentionally dwelt only on the main requirement - on the increase in the range of missiles - in order to concentrate attention on it. Naturally, the requirements with respect to the missiles of a front and of an army link (zveno) are not confined to this. However, it seems to us that the fulfillment of all the other requirements depends, in the end, on the solution of this very question.

In putting forward the above suggestions in the pages of the special collection we are pursuing the aim of beginning a discussion of the question of the perspectives of the development of missile armament of the ground troops which will help to find the most correct paths to its solution.

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